BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents *will not* correct images, please do not report the images to the Image Problem Mailbox.

What is claimed is:

1. A slider of a thin-film magnetic head comprising:

a slider section having a first medium facing surface that faces toward a rotating recording medium and an air inflow end; and

an element section having a second medium facing surface that faces toward the recording medium, an air outflow end, and a thin-film magnetic head element,

wherein the first medium facing surface has concavities and convexities for controlling the orientation of the slider section while the recording medium is rotating, and

the slider section and the element section are bonded to each other such that the air inflow end and the air outflow end are disposed on opposite sides with the first and second medium facing surfaces in between.

2. A slider of a thin-film magnetic head according to claim 1, wherein:

the slider section has a substrate portion and a medium facing layer placed on the substrate portion,

the first medium facing surface is formed on the medium facing layer,

the element section has an insulating portion surrounding the thin-film magnetic head element,

the substrate portion has a hardness greater than

that of the insulating portion, and

as the substrate portion and the medium facing layer are compared in hardness, the hardness of the medium facing layer is closer to the hardness of the insulating portion.

3. A slider of a thin-film magnetic head according to claim 1, wherein the first medium facing surface has a first surface closer to the element section, a second surface closer to the air inflow end, and a border portion located between the first and second surfaces, wherein the second surface is slanted against the first surface such that the first and second surfaces make a convex shape bent at the border portion.

4. A slider of a thin-film magnetic head according to claim 3, wherein, while the recording medium is rotating, the second surface slants against the surface of the recording medium such that the air inflow end is farther from the recording medium than the border portion is.

5. A slider of a thin-film magnetic head according to claim 4, wherein the second surface and the surface of the recording medium form an angle of 30° or smaller while the recording medium is rotating.

6. A slider of a thin-film magnetic head according to claim 3, wherein the slider section is in contact with the surface of the recording medium while the recording medium is at rest, and stays away from the surface of the recording medium while the recording medium is rotating.

7. A slider of a thin-film magnetic head according to claim 6, wherein, when the slider section comes into contact with the surface of the recording medium, the border portion is the first to make contact with the surface of the recording medium.

8. A slider of a thin-film magnetic head according to claim 6, wherein, when the slider section takes off from the surface of the recording medium, the border portion is the last to depart from the surface of the recording medium.

9. A slider of a thin-film magnetic head according to claim 3, wherein, regardless of whether the recording medium is rotating or at rest, the slider section is in contact with the surface of the recording medium at the border portion, and the first surface and the second surface slant against the surface of the recording medium such that the element section and the air inflow end are off the recording medium.

10. A slider of a thin-film magnetic head according to claim 3, wherein the first surface and the second surface form an angle of 30° or smaller.

11. A slider of a thin-film magnetic head according to claim 3, wherein the first medium facing surface has a recess formed in a region including the border portion.

12. A slider of a thin-film magnetic head according to claim 3, wherein the second medium facing surface is disposed farther from the recording medium than the first surface of the first medium facing surface is.

13. A slider of a thin-film magnetic head according to claim 1, wherein the thin-film magnetic head element comprises a magnetoresistive element for reproduction and an induction-type electromagnetic transducer for recording, the electromagnetic transducer being disposed farther from the slider section than the magnetoresistive element is.

14. A method of manufacturing a slider of a thin-film magnetic head, the slider comprising: a slider section having a first medium facing surface that faces toward a rotating recording medium and an air inflow end; and an element section having a second medium facing surface that faces toward the recording medium, an air

outflow end, and a thin-film magnetic head element, wherein the first medium facing surface has concavities and convexities for controlling the orientation of the slider section while the recording medium is rotating, and the slider section and the element section are bonded to each other such that the air inflow end and the air outflow end are disposed on opposite sides with the first and second medium facing surfaces in between, the method comprising the steps of:

producing the slider section;

producing the element section separately from the slider section; and

bonding the slider section and the element section to each other.

15. A method of manufacturing a slider of a thin-film magnetic head according to claim 14, wherein the step of producing the slider section includes the step of forming a plurality of the first medium facing surfaces corresponding to a plurality of the slider sections for a first wafer, and the step of producing the element section includes the step of forming a plurality of the thin-film magnetic head elements on a second wafer.

16. A method of manufacturing a slider of a thin-film magnetic head according to claim 14, wherein:

the step of producing the slider section includes the steps of: forming a plurality of the first medium facing surfaces corresponding to a plurality of the slider sections for a first wafer to thereby form a first slider section aggregate including a plurality of the slider sections arranged in a plurality of rows; and cutting the first slider section aggregate to thereby form a second slider section aggregates including a plurality of the slider sections arranged in a row;

the step of producing the element section includes the steps of: forming a plurality of the thin-film magnetic head elements on a second wafer to thereby form a first element section aggregate including a plurality of the element sections arranged in a plurality of rows; and cutting the first element section aggregate to thereby form a second element section aggregate including a plurality of the element sections arranged in a row; and

the step of bonding the slider section and the element section to each other includes the step of bonding the second slider section aggregate and the second element section aggregate to each other to thereby produce a slider aggregate including a plurality of the sliders arranged in a row,

the method further comprising the step of cutting the slider aggregate into a plurality of the sliders separated from one another.

17. A method of manufacturing a slider of a thin-film magnetic head according to claim 14, wherein: the slider section has a substrate portion and a medium facing layer placed on the substrate portion, the element section has an insulating portion surrounding the thin-film magnetic head element, the substrate portion has a hardness greater than that of the insulating portion, the hardness of the medium facing layer is closer to the hardness of the insulating portion as the substrate portion and the medium facing layer are compared in hardness, and

the first medium facing surface is formed on the medium facing layer in the step of producing the slider section.

18. A method of manufacturing a slider of a thin-film magnetic head according to claim 14, further comprising the step of lapping the first and second medium facing surfaces so as to flatten the first and second surfaces, after the step of bonding the slider section and the element section to each other.

19. A method of manufacturing a slider of a thin-film magnetic head according to claim 14, further comprising, after the step of bonding the slider section and the element section to each other, the step of lapping the first medium facing surface so as to allow the first

medium facing surface to have a first surface closer to the element section, a second surface closer to the air inflow end, and a border portion located between the first and second surfaces, and to allow the second surface to slant against the first surface such that the first and second surfaces make a convex shape bent at the border portion.

20. A method of manufacturing a slider of a thin-film magnetic head according to claim 19, wherein the first surface and the second surface form an angle of 30° or smaller.

21. A method of manufacturing a slider of a thin-film magnetic head according to claim 19, further comprising the step of forming a recess in a region including the border portion in the first medium facing surface.

22. A method of manufacturing a slider of a thin-film magnetic head according to claim 19, wherein the second medium facing surface is disposed farther from the recording medium than the first surface of the first medium facing surface is.

23. A method of manufacturing a slider of a thin-film

magnetic head according to claim 14, wherein the slider section and the element section are bonded to each other using a ceramic-based adhesive in the step of bonding the slider section and the element section to each other.

24. A method of manufacturing a slider of a thin-film magnetic head according to claim 14, wherein, in the step of bonding the slider section and the element section to each other, a thermosetting adhesive is put between the slider section and the element section, and the adhesive is cured by heating at a temperature of 300°C or less to thereby bond the slider section and the element section to each other.

25. A method of manufacturing a slider of a thin-film magnetic head according to claim 14, wherein the step of producing the element section includes the steps of: forming a plurality of the thin-film magnetic head elements on one of surfaces of a wafer; and removing at least part of the wafer by lapping the other one of the surfaces of the wafer.

26. A method of manufacturing a slider of a thin-film magnetic head according to claim 25, wherein, in the step of bonding the slider section and the element section to each other, a surface formed at the element section by the

lapping is bonded to the slider section.

27. A method of manufacturing a slider of a thin-film magnetic head according to claim 25, wherein, in the step of bonding the slider section and the element section to each other, a surface opposite to the surface formed at the element section by the lapping is bonded to the slider section.

28. A method of manufacturing a slider of a thin-film magnetic head according to claim 25, wherein, in the step of removing at least part of the wafer, the other one of the surfaces of the wafer is lapped with a support plate placed on a plurality of the thin-film magnetic head elements.

29. A method of manufacturing a slider of a thin-film magnetic head according to claim 28, wherein at least part of the support plate, the part including the surface facing the thin-film magnetic head elements, has conductivity.

30. A method of manufacturing a slider of a thin-film magnetic head according to claim 14, wherein the step of producing the slider section includes the steps of:

forming an etching mask of metal on one of surfaces of a

ceramic substrate; and etching the ceramic substrate by dry etching through the use of the etching mask to thereby form the concavities and convexities on the one of the surfaces of the ceramic substrate.

31. A method of manufacturing a slider of a thin-film magnetic head according to claim 30, wherein the dry etching is reactive ion etching.

32. A method of manufacturing a slider of a thin-film magnetic head according to claim 14, wherein the step of producing the slider section includes the steps of: forming a first etching mask of metal on one of surfaces of a ceramic substrate; etching the ceramic substrate by dry etching through the use of the first etching mask to thereby form a first recess in the one of the surfaces of the ceramic substrate; forming a second etching mask to cover part of the first recess; and etching the ceramic substrate further by dry etching through the use of the second etching mask to thereby form a second recess deeper than the first recess in the one of the surfaces of the ceramic substrate.

33. A method of manufacturing a slider of a thin-film magnetic head according to claim 14, wherein a magnetoresistive element for reproduction and an

induction-type electromagnetic transducer for recording are formed in this order on one of surfaces of a wafer in the step of producing the element section, and the slider section and the element section are bonded to each other such that the magnetoresistive element is disposed closer to the slider section than the induction-type electromagnetic transducer in the step of bonding the slider section and the element section to each other.

34. A method of manufacturing a slider of a thin-film magnetic head according to claim 14, wherein an induction-type electromagnetic transducer for recording and a magnetoresistive element for reproduction are formed in this order on one of surfaces of a wafer in the step of producing the element section, and the slider section and the element section are bonded to each other such that the magnetoresistive element is disposed closer to the slider section than the induction-type electromagnetic transducer in the step of bonding the slider section and the element section to each other.